

REMARKS

In the Office Action, claims 1-8 were pending, and claims 1-8 were rejected. Claim 1 has been amended. The amendment does not contain new matter. Support for the amendment can be found in the application as originally filed. Please consider the following remarks.

I. Rejection under 35 U.S.C. §102

In the Office Action at page 2, number 1, claim 1 was rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,337,309 ("Watts"). The Examiner alleges that Watts (see Structure II in col. 7) discloses a succinimide friction modifier which is the reaction product between a C₆-C₃₀ alkyl substituted succinic acid or anhydride and a polyamine, which may have a C₄-C₃₀ hydrocarbyl group such as the tetraethylene pentamine disclosed in column 8, line 66. The Examiner further alleges that the lower endpoint of the range disclosed by Watts for the alkyl substituent of the succinic acid (C₆) coincides with the upper endpoint in claim 1 of the present invention.

A. The Present Invention

The present invention as recited in claim 1 is a power transmission fluid composition which comprises: (a) a major amount of an oil of lubricating viscosity; (b) an effective amount of a power transmission fluid performance additive package; and (c) a static friction reducing amount of a member selected from the group consisting of the reaction products of maleic or succinic acid or anhydride or a C₁-C₆ alkyl substituted maleic or succinic acid or anhydride with a primary aliphatic amine of the formula R-NH₂ wherein R is a C₄-C₃₀ hydrocarbyl group **which does not contain a primary amine**.

B. Watts

Watts discloses a zinc-free lubricating composition for lubricating a continuously variable transmission. The lubricating composition comprises a mixture of a major amount of a lubricating oil and an effective amount of a performance enhancing additive

combination comprising: (a) an ashless polyisobutenyl succinimide dispersant; (b) at least one organic thioether phosphite; (c) a calcium phenate overbased detergent at a concentration such that the total amount of calcium in the fluid is less than about 500 ppm; (d) friction modifiers comprising one or more succinimides and one or more ethoxylated amines; and (e) a primary amide of a long chain carboxylic acid. The friction modifier of Watts is represented by Structure II in column 7.

C. Traversal of the Rejection

For a claim to be anticipated under 35 U.S.C. 102(b), each and every element set forth in a claim must be found in a single prior art reference. *Verdegaal Bros. vs. Union Oil Co. of California*, 814 F.2d 628, 63, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The present invention as recited in claim 1 is a power transmission fluid composition which comprises a static friction reducing amount of a member ("static friction member") selected from the group consisting of the reaction products of maleic or succinic acid or anhydride or a C₁-C₆ alkyl substituted maleic or succinic acid or anhydride with a primary aliphatic amine of the formula R-NH₂ wherein R is a C₄-C₃₀ hydrocarbyl group which does not contain a primary amine. Because the static friction member is formed by a reaction involving a primary alkyl amine (R is a C₄-C₃₀ hydrocarbyl group), it is a monosuccinimide. The static friction member includes a single succinimide.

In contrast to the present invention as recited in claim 1, Watts discloses a di-succinimide friction modifier as illustrated by Structure II. As discussed in Watts at col. 8, lines 54 and 55, the friction modifiers are formed from reaction involving polyamines; not a monoamine as in the present invention. Therefore, the resulting friction modifier in Watts is a symmetrical di-succinimide (i.e., it contains **TWO** succinimides). Di-succinimides exhibit different properties than succinimides. Because the static friction member of the present invention is a monosuccinimide, not a di-succinimides, it is a different compound than the friction modifier disclosed in Watts.

In the "Response to Arguments" section of the Office Action, the Examiner said claim 1 recites a primary aliphatic amine of the formula R-NH₂ where R is a C₄-C₃₀ "hydrocarbyl" group, and "hydrocarbyl" group is defined on page 7, lines 11-25 of the

specification as a group having predominantly hydrocarbon character and which can contain substituted hydrocarbon groups and heteroatoms, where the list of substituted groups does not exclude amines and nitrogen is listed as a suitable heteroatom. As a result of the way "hydrocarbyl" is defined in the specification, the Examiner alleges the recited static friction member can be formed from a reaction involving polyamines and therefore includes the di-succinimides as disclosed in Watts.

Via amendment, Applicants have expressly excluded compounds from the definition of "hydrocarbyl" which would result in the static friction member being formed by a reaction involving any compound other than a primary alkyl amine (R is a C₄-C₃₀ hydrocarbyl group which does not contain a primary amine). Consequently, the amendment restricts the static friction member in claim 1 to a monosuccinimide.

Therefore, Watts does not anticipate the present invention as recited in claim 1. Specifically, Watts does not disclose a power transmission fluid composition comprising a static friction member that is a monosuccinimide of a primary alkyl amine. Therefore, claim 1 is not anticipated by the present invention, and Applicants respectfully request the withdrawal of this rejection.

II. Rejections under 35 U.S.C. §103

A. Rejection over Watts in view of U.S. Patent No. 4,396,516 (Kinoshita)

In the Office Action at page 2, number 2, claims 1-3 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Watts in view of Kinoshita. The Examiner stated that Watts does not disclose the reaction product of an unsubstituted or C₁-C₆ alkyl substituted succinic or maleic acid or anhydride as recited in claim 1 (specifically, component (c)) nor the length of the hydrocarbyl group of the amine as in claim 3. However, the Examiner alleges it would have been obvious to one of ordinary skill in the art (1) to include in Watts a succinic or maleic acid or anhydride material as taught by Kinoshita and (2) to modify the C₆ alkyl substituted succinic anhydride of Watts to an analogous maleic anhydride as taught by Kinoshita to reduce friction. Applicants respectfully traverse this rejection.

1. Kinoshita

Kinoshita discloses a lubricant comprising an imide compound obtained by reacting a dibasic acid selected from the group consisting of succinic acid, maleic acid, glutaric acid and phthalic acid with a primary amine having a C₈-C₁₈ hydrocarbon radical. The lubricant of the invention may be used in combination with a specified diamine derivative and known lubricant additives, and exhibits excellent lubricating properties.

2. Traversal of the Rejection

For a proper rejection under Section 103, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The present invention as recited in claim 1 is a power transmission fluid composition which comprises a static friction reducing member selected from the group consisting of the reaction products of maleic or succinic acid or anhydride or a C₁-C₆ alkyl substituted maleic or succinic acid or anhydride with a primary aliphatic amine of the formula R-NH₂ wherein R is a C₄-C₃₀ hydrocarbyl group which does not contain a primary amine. As discussed above, the static friction member is a monosuccinimide of a primary alkyl amine

The Examiner has alleged that the present invention as recited in claim 1 is obvious in light of the combination of Watts and Kinoshita. Specifically, the Examiner stated that Konoshita teaches including in Watts a succinic or maleic acid or anhydride material and to modify the C₆ alkyl substituted succinic anhydride of Watts to an analogous maleic anhydride to reduce friction. In short, the Examiner is saying the

teachings concerning the imide in Kinoshita can be used to modify the friction modifiers of Watts.

In contrast to the present invention as recited in claim 1, Watts teaches a di-succinimide friction modifier. As discussed above, the friction modifier of Watts is structurally different than the static friction reducing member of the present invention. In the Examples in Watts, the friction modifier is present in amount equal to 0.45% of the lubricant composition.

In contrast to the present invention as recited in claim 1, Kinoshita teaches a base lubricant comprising an imide compound. Known additives such as viscosity modifiers, corrosion inhibitors, etc. can optionally be added to the base lubricant. In the Examples in Kinoshita, the imide base lubricant is present in amount greater than 98% of the lubricant composition.

Comparing the amount of the friction modifier of Watts included in a lubricant composition to the amount of imide base lubricant of Kinoshita included in a lubricant composition, it is clear that the two compounds are used for very different purposes. In Watts, the di-succinimide is used as a friction modifying additive. And in Kinoshita, the imide is used as a base lubricant. Given the vastly different uses of the compounds in the two references, there can be no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the di-succinimide friction modifier in Watts based on the teaching in Kinoshita of imide base lubricants.

Even if we assume there was motivation to combine the references, the friction modifier resulting from a combination of Watts and Kinoshita would still be a di-succinimide. For the reasons discussed above, the monsuccinimide static friction member as recited in claim 1 is patentably unobvious over a friction modifying di-succinimide. The two compounds are structurally different and have different properties.

Because (1) the Examiner has improperly combined the teachings of Watts and Kinoshita under Section 103 and (2) a combination of Watts and Kinoshita does not teach or suggest all the claim limitations in claim 1, specifically, a power transmission fluid composition comprising a monosuccinimide friction reducing member, claim 1 is

patentable over Watts in view Kinoshita. Applicants respectfully request the withdrawal of this rejection.

Claims 2, 3 and 6, directly or indirectly, depend from claim 1 of the present invention and recite the invention in varying scope. As discussed above, the Examiner has improperly combined the teachings of Watts and Kinoshita and a combination of Watts and Kinoshita does not teach or suggest all the claim limitations in claim 1 as further limited by claims 2, 3 and 6. As a result, Applicants respectfully request the withdrawal of the rejection of claims 2, 3 and 6 over Watts in view of Kinoshita.

B. Rejection over Watts in view of Kinoshita and further in view of U.S. Patent No. 5,578,236 ("Srinivasan")

In the Office Action at page 2, number 3, claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Watts in view of Kinoshita as applied to claims 1-3 and 6 above and further in view of Srinivasan. The Examiner stated that Watts in view of Kinoshita does not teach the percentage of friction modifier present in the composition. However, the Examiner alleges that it would have been obvious to one of ordinary skill in the art to include in Watts in view of Kinoshita the concentration of friction modifier taught by Srinivasan to reduce friction. Applicants respectfully traverse this rejection.

1. Srinivasan

Srinivasan discloses power transmission fluids that have a Brookfield viscosity of 13,000 cP or less at -40.degree. C., a viscosity of at least 2.6 mPa.multidot.s at 150.degree. C. in the ASTM D-4683 method, and a viscosity of at least 6.8 cSt at 100.degree. C. after 40 cycles in the FISST of ASTM D-5275.

2. Traversal of the Rejection

The rule for a proper rejection under Section 103 is shown above. The present invention as recited in claim 4 is a composition as recited in claim 1 wherein the friction reducing member is present in an amount ranging from 0.01 to 10 wt. %.

As discussed above, (1) the Examiner has improperly combined the teachings of Watts and Kinoshita and (2) a combination of Watts and Kinoshita does not teach or suggest all the claim limitations in claim 1 as further limited by claim 4. Specifically, the combination of Watts and Kinoshita does not teach or suggest the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claim 4.

Similarly, Watts in view of Kinoshita and further in view of Srinivasan does not teach or suggest the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claim 4. Srinivasan is only used to teach the amount of friction modifier that can be present in a lubricant composition.

As a result, claim 4 is not taught or suggested by Watts in view of Kinoshita and further in view of Srinivasan. Applicants respectfully request the withdrawal of this rejection.

C. Rejection over Watts in view of Kinoshita and further in view of U.S. Patent No. 5,344,579 ("Ohtani")

In the Office Action at page 2, number 4, claims 7 and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watts in view of Kinoshita as applied to claims 1-3 and 6 above and further in view of Ohtani. The Examiner stated that Watts in view of Kinoshita does not teach the use of the fluid composition in an automatic transmission or more broadly a power transmission device. However, the Examiner alleges it would have been obvious to one of ordinary skill in the art to include the fluid disclosed by Watts in view of Kinoshita within an automatic transmission or other power transmission device as taught by Ohtani. Applicants respectfully traverse this rejection.

1. Ohtani

Ohtani discloses a friction modifier system. The additive composition comprises at least the following components: a) a hydroxyalkyl aliphatic imidazoline in which the hydroxyalkyl group contains from 2 to about 4 carbon atoms, and in which the aliphatic group is an acyclic hydrocarbyl group containing from about 10 to about 25 carbon

atoms; and b) a di(hydroxyalkyl) aliphatic tertiary amine in which the hydroxyalkyl groups, being the same or different, each contain from 2 to about 4 carbon atoms, and in which the aliphatic group is an acyclic hydrocarbyl group containing from about 10 to about 25 carbon atoms. Applicants respectfully traverse this rejection.

2. Traversal of the Rejection

The rule for a proper rejection under Section 103 is shown above. The present invention as recited in claims 7 and 8 include limitation pertaining to the composition of claim 1 contained in a power transmission device and an automatic transmission apparatus, respectively.

As discussed above, (1) the Examiner has improperly combined the teachings of Watts and Kinoshita and (2) a combination of Watts and Kinoshita does not teach or suggest all the claim limitations in claim 1 as further limited by claims 7 and 8. Specifically, the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claims 7 and 8 is not taught or suggested by the combination of Watts and Kinoshita.

Similarly, Watts in view of Kinoshita and further in view of Ohtani does not teach or suggest the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claims 7 and 8. Ohtani is only used to teach a fluid like Watts can be used within an automatic transmission or other power transmission device

As a result, claims 7 and 8 are not taught or suggested by Watts in view of Kinoshita and further in view of Ohtani. Applicants respectfully request the withdrawal of this rejection.

D. Rejection over Watts in view of Kinoshita and further in view of U.S. Patent No. 5,597,506 ("Block")

In the Office Action at page 3, number 5, claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Watts in view of Kinoshita as applied to claims 1-3 and 6 above and further in view of Block. The Examiner stated that Kinoshita does not

teach the C₁₈ hydrocarbon group is linear forming octadecyl amine as in claim 5 or branched. However, the Examiner alleges it would have been obvious to one of ordinary skill in the art at the time that the saturated C₁₈ hydrocarbyl group attached to the amine of Kinoshita should be linear octadecyl amine to form a friction reducing additive as taught by Bloch. Applicants respectfully traverse this rejection.

1. Bloch

Bloch discloses a method of controlling the friction coefficients and improving the friction durability of an oleaginous compositions, such as an ATF, comprising adding to the composition a combination of competing additives comprising (1) at least one friction modifying chemical additive having a polar head group and a friction reducing substituent group and (2) at least one non-friction reducing additive and/or friction increasing additive having the same polar group as the friction modifying chemical additive, but having a substituent group which has no material friction raising or lowering effect (non-friction reducing additive) or a substituent group which increases the friction coefficients (friction increasing additive) of the composition.

2. Traversal of the Rejection

The rule for a proper rejection under Section 103 is shown above. The present invention as recited in claim 5 is a composition of claim 1 wherein the amine is a octadecyl amine.

As discussed above, (1) the Examiner has improperly combined the teachings of Watts and Kinoshita and (2) a combination of Watts and Kinoshita does not teach or suggest all the claim limitations in claim 1 as further limited by claim 5. Specifically, the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claim 5 is not taught or suggested by the combination of Watts and Kinoshita.

Similarly, Watts in view of Kinoshita and further in view of Bloch does not teach or suggest the power transmission fluid composition comprising a monosuccinimide friction reducing member recited in claim 5. Bloch is only used to teach a saturated C₁₈

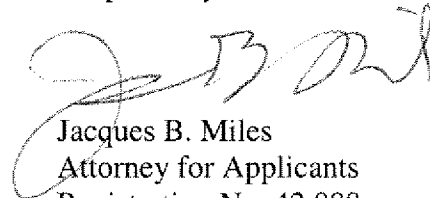
hydrocarbyl group attached to an amine like in Kinoshita should be linear octadecyl amine to form a friction reducing agent.

As a result, claim 5 is not taught or suggested by Watts in view of Kinoshita and further in view of Bloch. Applicants respectfully request the withdrawal of this rejection.

II. Conclusion

Based upon the foregoing, it is submitted that the invention now claimed is neither anticipated, nor rendered obvious by the prior art of record and that the application is now in condition for allowance. The Applicants therefore request that the application now be passed to issue.

Respectfully submitted,



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